

Claims

[c1] 1. The method of manufacturing a multi-tube fluorescent discharge lamp, comprising:

- forming an isolator nearby the middle of the first glass tube;
- perforating through-hole nearby the both ends of the first glass tube;
- coating phosphor on the outer surface of the first glass tube;
- coating phosphor on the inner surface of the second glass tube, which is slightly larger than the first glass tube;
- installing two cathode portions, each includes a pair of electrodes, a pipe, a stem and a hole, at respective the both ends of the first glass tube;
- fusing the two ends of the first glass tube with the cathode portions;
- installing the first glass tube into the second glass tube in coaxial;
- fusing the two ends of the first glass tube and the second glass tube;
- drying the phosphor layer and sealing one of the pipe by heat;
- injecting Hg as several mg into the discharge chamber from the other opening pipe;
- vacuuming the discharge chamber from the other opening pipe ;
- filling Ar gas as several hundreds Pa in pressure into the discharge chamber;
- sealing the other opening pipe;
- agitating the liquid Hg into vapor Hg;
- installing two bases to respective ends of the discharge tube.

[c2] 2. The method of manufacturing a multi-tube fluorescent discharge lamp, comprising:

- forming an isolator nearby the middle of the first glass tube;
- perforating through-hole nearby the both ends of the isolator of the first glass tube;
- perforating through-hole nearby the both ends of the second glass tube, which is slightly larger than the first glass tube ;
- installing the first glass tube into the second glass tube in coaxial;
- forming an isolator nearby the middle of the second glass tube correspond to the isolator of the first tube;

coating phosphor on the outer and inner surface of the first glass tube and second glass tube;

coating phosphor on the inner surface of the third glass tube, which is slightly larger than the second glass tube;

installing two cathode portions, each includes a pair of electrodes, a pipe, a stem and a hole, at respective the both ends of the first glass tube;

fusing the two ends of the first glass tube with the cathode portions ;

installing the combination of the first glass tube and second glass tube into the third glass tube in coaxial;

fusing the two ends of all glass tubes;

drying the phosphor layer and sealing one of the pipe by heat;

injecting Hg as several mg into the discharge chamber from the other opening pipe;

vacuuming the discharge chamber from the other opening pipe;

filling Ar gas as several hundreds Pa in pressure into the discharge chamber;

sealing the other opening pipe;

agitating the liquid Hg into vapor Hg;

installing two bases to respective ends of the discharge tube.

[c3] 3. The method of claim 1 or 2, wherein said the isolator of the first glass tube is performed by heating at the circumference to approach the middle of the first glass tube for softening and is rotated in the reverse direction at both ends of the tube, and is twisted at the soften place then fusing into an isolator to seal the pipeline of the first glass tube, thus, forming two discharge chambers.

[c4] 4. The method of claim 1, wherein said the through-hole of the first glass tube are performed by blowing the air in from both ends of the first glass tube, or at one end of the first glass tube is air tight and the air is blown in from another end, also heating is performed nearby both ends of isolator on the two circumferences at the position of plural number, thus the through-hole of plural number are formed.

- [c5] 5. The method of claim 2, wherein said the through-hole of the first glass tube is performed by blowing the air in from both ends of the first glass tube, also heating is performed nearby both ends of the isolator on the two circumferences at the position of plural number thus the through-hole of plural number are formed.
- [c6] 6. The method of claim 2, wherein said the through-hole of the second glass tube is performed by blowing the air in from both ends of the second glass tube, or at one end of the second glass tube is air tight and the air is blown in from another end, also heating is performed nearby both ends on the two circumferences at the position of plural number thus the through-hole of plural number are formed.
- [c7] 7. The method of claim 2, wherein said the isolator of the second glass is performed by heating on the circumference of the second glass tube correspond to the isolator of the first glass tube, also, rotation is made with reverse direction at both ends of the second glass tube, and is twisted at the softening place of the tube thus fusing into another isolator with the first glass tube to seal the pipeline of the second glass tube and separating the discharge path of the second glass tube into two discharge chambers.
- [c8] 8. The method of manufacturing a multi-tube fluorescent discharge lamp, comprising:
installing two cathode portions, each includes a pair of electrodes, a pipe, a stem and a hole, at respective the both ends of the first glass tube;
forming an isolator nearby the middle of the second glass tube, which is slightly larger than the first glass tube;
perforating through-hole nearby the both ends of the second glass tube;
coating phosphor on the outer surface of the first glass tube;
coating phosphor on the inner and outer surface of the second glass tube;
coating phosphor on the inner surface of the third glass tube, which is slightly larger than the second glass tube;
installing the two first glass tubes into respective the two chambers of the

second tube in coaxial;
fusing the two ends of the first glass tube and the second glass tube;
installing the combination of the first glass tube and the second glass tube
into the third glass tube in coaxial;
fusing the two ends of all glass tubes;
drying the phosphor layer and sealing one of the pipe by heat;
injecting Hg as several mg into the discharge chamber from the other
opening pipe;
vacuuming the discharge chamber from the other opening pipe
filling Ar gas as several hundreds Pa in pressure into the discharge chamber;
sealing the other opening pipe;
agitating the liquid Hg into vapor Hg;
installing two bases to respective ends of the discharge tube.

[c9] 9. The method of claim 8, wherein the first tube is a round straight glass tube, in which a pair of electrodes and one pipe with said tube are slid in coaxial, and heating at one end of the tube for softening, by means of clamping, pressing and sealing the tube, the pair of electrodes and pipe can be fixed, air is blown into the pipe, by means of the heating at the end of sealed, a hole can be extruded, install cathode on the pair of electrode.

[c10] 10. The method of claim 8, wherein said the through-hole of the second glass tube is performed by blowing the air in from both ends of the second glass tube, or one end of said tube is air tight and the air is blown in from another end, also, heating is performed on the circumferences to approach both ends of the second glass tube at the position of plural number thus extruding the through-hole with plural number.

[c11] 11. The method of claim 8, wherein said the isolator of the second glass tube is performed by heating on the circumference of the second glass tube to approach the middle of the second glass tube, also, rotation is made with reverse direction at both ends of the second glass tube, and is twisted at the softening place of the tube thus fusing into an isolator to seal the pipeline of

the second glass tube and separating the discharge path of the second glass tube into two discharge chambers.

- [c12] 12. The method of claim 1,2 or 8, wherein said the fusing is to use as a flame of gas and oxygen.
- [c13] 13. The method of claim 1,2 or 8, wherein said the fusing is to use as an arc.
- [c14] 14. The method of claim 1,2 or 8, wherein said the drying is performed by heating on outside of the combination of tubes; meanwhile, blowing in dry air from one of the pipe and exhausted from the other pipe.
- [c15] 15. The method of claim 1,2 or 8, wherein said the agitation of the Hg is performed in an environment of electromagnetic field.
- [c16] 16. The method of claim 15, wherein said the environment of electromagnetic field is the inner of a microwave chamber.
- [c17] 17. The method of claim 1,2 or 8, wherein said the fusing the two ends of all glass tubes is performed by heating at the outskirts of the circumference at both ends of all glass tubes that can be melted and sealed, also, a cap can be placed at both ends of the glass tubes, on the cap of the circumferences correspond to the both ends of all glass tubes is heated, both ends of the tubes can be melted and sealed with the cap.
- [c18] 18. The method of claim 1,2 or 8, wherein said the base which includes a pair of terminals that connected to the electrodes respectively.